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character which is supposed to represent a *bundle of reeds*. As a root, this seems to signify "to clothe or wrap up," and so may be connected with στέλλω. I repeat, that I do not consider these analogies as proofs. I only regard them as heightening a previously existing probability. But even if it should turn out that the consonantal value of this character was some other modified sibilant, the syllable *is* or *iss* might still be derivable from that with a vowel supplied at its beginning. Enough, I trust, has been said to show that the reading *Issakar* is not a mere arbitrary one, but that arguments which appear to have some weight may be adduced in its favour. Whether or not this opinion is sound, must be decided by others. I have no doubt that the truth will ultimately prevail.

There are many points of great interest to which I have in this paper merely alluded; at a future period I hope that I may discuss them at greater length.

Sir W. R. Hamilton communicated the concluding part of his paper "On certain Equations in Quaternions, connected with the Theory of Fresnel's Wave Surface."

W. R. Wilde, M. R. I. A., exhibited:—1. The head of the old Connaught ox, as an illustration of his remarks made at a former meeting. 2. Some gold ornaments found recently in the county of Kildare, at Ballinderry, near Enfield, and a number of bones of horses and other animals discovered at the same time. 3. An ancient crozier, found in the county of Cavan, and known as the "Crozier of the O'Bradys." 4. A MS., called the "Plunket MS.," and now the property of the Earl of Fingal. Mr. Wilde gave a description of the MS. and its contents.

Sir W. R. Hamilton handed in a letter, addressed to him by Mr. Graham, of Markree Observatory, containing observations on Donati's Comet.

Markree Observatory, Colloony, Nov. 6, 1858.

Dear Sir William,—At the conclusion of our series of observations of Donati's Comet I was encouraged, by the length of arc described since the first discovery, to undertake the calculation of the orbit, in the hope of being able to settle the question of ellipticity to my own satisfaction. The observations selected, freed from aberration and parallax, were—

	Greenwich M. T.	Rt. Ascen.	Declin.
1858, June, . . .	8·35573 . . .	141° 15′ 38″·7 . . .	+24° 27′ 42″·7
,, August, . .	25·52010 . . .	156 30 21 ·2 . . .	+33 6 21 ·4
,, October, . .	16·28287 . . .	243 58 1 ·7 . . .	−16 18 41 ·2

Made at Florence, Washington, and Markree respectively.

I first attempted to represent them by a parabola, and obtained the following set of elements:—

$$\begin{array}{rl} T = & 1858,\ \text{Sept. } 29{\cdot}97161 \text{ Greenwich M. T.} \\ \pi = & 294^\circ 18' 39''{\cdot}5 \\ \Omega = & 165\ 15\ 52\ {\cdot}0 \\ i = & 116\ 56\ 26\ {\cdot}3 \\ \log q = & 9{\cdot}761856. \end{array} \left.\begin{array}{l} \\ \\ \\ \end{array}\right\} \begin{array}{l}\text{Mn. Eqx.} \\ 1858{\cdot}0\end{array}$$

But the calculated place for the mean observation differed from the observation by 40 minutes of arc.

I then set to work to represent the observation without any hypothesis as to the nature of the conic section described. The result is—

$T =$ 1858, Sept. 29·95894 Greenwich M. T.
$\pi = 294^\circ\ 27'\ 40''\cdot1$ } Mn. Eqx.
$\Omega = 165\ \ 20\ \ 46\ \cdot5$ } 1858·0
$i = 116\ \ 58\ \ 59\ \cdot6$
$\phi = 84\ \ 45\ \ 2\ \cdot3$
log. $q = 9\cdot7623494$
log. $a = 2\cdot1397158$
Period, 1620 years.

The corrections of calculated by observed places are—

	In Long.	In Lat.
June 8, ...	$-0''\cdot9$	$+1''\cdot5$
Aug. 25, . . .	$-0\ \cdot1$	$+0\ \cdot3$
Oct. 16, ...	$-0\ \cdot4$	$0\ \cdot0$

Of course, I cannot answer for the accuracy of the observations; but I endeavoured to select those which were best adapted to answer the end proposed.

Leaving room for a wide margin in regard to the major axis of the orbit and its dependent period, this much seems now established,—that the Comet is travelling in an ellipse. The agreement in the several sets of elliptic elements, determined independently from separate data, is calculated to inspire confidence in astronomical observations and calculations. Take, for instance, the Perihelion passage:—

Bruhns	makes the time	September,	29^d	22^h	53^m	Greenwich M. T.
Löwy,	,,	,,		23	2	,,
Graham,	,,	,,		21	1	,,

The perihelion distance, taking the Earth's mean distance from the Sun at 95,000,000 miles, is according to—

Bruhns, ...	54,952,520 miles.
Löwy, ...	54,957,220 ,,
Graham, ...	54,963,330 ,,

The extreme difference in the results for the time of perihelion passage being 9 minutes, in perihelion distance 10,810 miles, about a 5000th part of the whole distance—something like an error of 1 foot in measuring an English mile.

A few deductions from the elements given above, thrown into a popular form, may be interesting.

The aphelion distance is about 275 times the Earth's mean distance from the Sun, about 9 times the distance of Neptune—26,000,000,000 miles.

The light and heat at perihelion are 3 times greater than what we receive from the Sun; at aphelion, 76,000 times less.

The aphelion distance is 476 times the perihelion—so that the light and heat at perihelion are 226,000 times greater than at aphelion.

Seen from the Comet at perihelion the diameter of the Sun would subtend an angle of 55′ 23″; from aphelion, 7″. So that, in the latter position, our luminary would only appear as an intensely brilliant point.

The velocity at perihelion is 1[illegible]7,000 miles per hour; at aphelion, only 267 miles per hour.

The Comet was in the plane of the ecliptic coming northward a little before noon on March 26th, its distance from the Sun being 298,000,000 miles,—consequently more than 200,000,000 miles beyond the orbit of the Earth. It was in the plane of the ecliptic going southward about midnight on the 18th October, when its distance from the Sun was 67,000,000 miles, 28,000,000 miles within the orbit of the Earth. We are then in no danger from this member of our system.

Its nearest approach to Venus was on October 18th, at 3 in the morning, when the distance of the two bodies was 8,360,000 miles. Its nearest approach to the Earth was on October 11th, at midnight, when the distance from us was 51,000,000 miles. So that at Venus the Comet must have appeared 37 times brighter than it did to us.

The Comet was in the plane of the orbit of Venus on October 20th, at half-past 9 P.M. Its distance from the Sun—69,621,000 miles. Rad. Vect. of orbit of Venus—69,105,000 miles. Difference—516,000 miles. Longitude of descending node for orbit of Venus—343° 37′ 14″. Venus was in that longitude October $13^d\ 5^h$. Had the Comet then been seven days earlier, it would have approached within half a million miles of Venus, would have been about 100 times nearer than it was to us at its nearest approach, and its disk and splendour would have been 10,000 times greater.

I fear you will hardly consider these details worth the reading. My reason for giving them is that in case you think it worth while to bring the elements before the Academy, the remarks may help to take away the meagre appearance of a few lines of figures which have cost me some hours, indeed days, of laborious calculation.

Yours, my dear Sir William, very truly,

A. GRAHAM.

Sir William R. Hamilton.

The thanks of the Academy were given to the Right Hon. the Earl of Fingal for having granted Mr. Wilde permission to exhibit the Plunket M.S., called "The Sight of the Blind," and make the extracts from it to be published in the Proceedings.

The Academy then adjourned.